



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Description of the species of APHODIUS and DIALYTES of the United States.

BY GEO. H. HORN, M. D.

The following essay presents to the student a list of all the species of *Aphodius* known from North America, north of Mexico, and contains the results of many years careful collection of specimens from every region of our country by personal labor or through the kindness of many correspondents who have all promptly responded to the request for the loan and gift of specimens. The basis of the work was found in the admirable collection of Dr. Leconte, and around this all new species have been arranged. Several types of Alaskan species have been of much value in determining their correct positions as well as those of allied forms unknown to us in nature.

The species have been arranged in groups for the most part equivalent to those of Erichson (*Insecten Deutschlands*) while several new ones have been indicated for our West Coast species.

The genus *Dialytes* Harold, (*Coleopterologische, Hefte V*, 1869, p. 101) differs from *Aphodius* in the structure of the anterior tibiae on which the two upper teeth are obsolete, the third at the angle and acute, while the fourth is anterior and projects forward over the insertion of the tarsus. The head is strongly deflexed, the front not carinate nor tuberculate. Eyes partially hidden.

A fuller comparison of the genera will be made when sufficient time shall have elapsed for the completion of the remaining species and genera of the tribe.

APHODIUS, Illig.

Our species of *Aphodius* have become quite numerous in collections but present various characters by which they may be divided into groups, each containing but small series of species, and the study is therefore rendered comparatively easy. We may divide the genus primarily into two sections;

Scutellum elongate, equaling $\frac{1}{2}$ or one-fifth the length of the elytra.... *Section I.*
 Scutellum short, as broad or broader than long, never exceeding in length $\frac{1}{2}$ or one-tenth the length of the elytra..... *Section II.*

Section I is composed entirely of large species, in our fauna, although not containing all our large species. It may be again subdivided as follows.

Group A.—Body very convex, elytra not truncate at apex; head tuberculate; anterior femora not fimbriate; anterior tibiæ above the upper tooth entire, not serrate; anterior spur of middle tibiæ slender, conspicuous; middle and hind tarsi with first joint at least as long as the three following; apex of hind tibiæ fringed with short equal spinules.

This group corresponds with *Teuchestus*, Muls., and contains but one species introduced into the Canadian fauna from Europe.

A. fossor, Linn. (*Scarabæus*) Fauna Suec. p. 134.

Oblong, convex, black, shining; elytra finely punctate-striate; front trituberculate.

Male.—Middle frontal tubercle prolonged into a short horn; thorax slightly impressed in front; anterior tibiæ with an elongate spur obtuse at tip. Length ♂ 36—48 inch; ♀ 12 mm.

Female.—Frontal tubercles small, equal; thorax not impressed; anterior tibiæ with a more slender, acute spur.

This species is said to vary in having reddish elytra.

Specimens have been received from Canada and the New England States.

As this species is so well known abroad and may be readily recognised by student of our fauna by its large size and peculiar characters, I have contented myself with copying the short but characteristic description of Erichson.

Group B.—Form elongate oval, sub-depressed; head not tuberculate; anterior femora (especially in ♂) fimbriate with moderately long hairs; outer edge of anterior tibiæ usually serrate above the upper tooth; anterior spur of middle tibiæ ♂ short robust, not conspicuous, that of female longer, more slender and acute; middle and hind tarsi with the first joint elongate, that of the hind tarsus of male deformed; apex of hind tibiæ fimbriate with unequal spinules.

The deformity of the first hind tarsal joint of the male is a peculiarity not known to me in any species outside of this group. The joint may be described as V-shaped, attached to the tibiæ by the longer and broader branch, the other being shorter, more slender and acute at tip. The inner or anterior spur of the middle tibia is short, rather robust and partially concealed, being scarcely longer than a fourth of the outer spur. The spur of the anterior tibiæ of male is very broadly spatulate and varies somewhat in accordance with the species, that of the female being much more slender and sub-acute at tip. In all the species the front is broadly rounded, slightly emarginate at middle.

This Section is probably equivalent to *Colobopteris*, Muls., but I can find no mention of the peculiar sexual characters in an specific description.

The following table will enable our species to be recognised:

Pygidium entirely covered by the elytra in both sexes.

Base prothorax with distinct entire marginal line.

Thorax with moderately rounded sides, not broader in front than the elytra.....**pinguis**.

Thorax with strongly rounded sides, broader in front than elytra.....**validus**, n. sp.

Base of prothorax with marginal line interrupted at middle, sometimes entirely wanting.

Striæ of elytra deep, interpaces convex.....**hamatus**.

Striæ of elytra faint, interpaces flat.

Frontal margin broadly rounded, feebly emarginate at middle.....**hyperboreus**.

Frontal margin feebly emarginate at middle and sinuate on each side near the angles.....**torpidus**, n. sp.

Pygidium exposed, elytra sub-truncate at tip in both sexes.

Thorax with basal marginal line distinct at sides; angles of genæ obtuse, not prominent.....**occidentalis**.

A. pinguis, Hald., Journ. Acad. Ser. ii, vol. 1, 1848, p. 103.

Oblong black, shining, moderately convex. Front broadly rounded, feebly truncate at middle. Head finely punctured, coarser and more dense on front and toward the sides, finer and more sparsely placed on the vertex. Thorax broader than long, feebly narrower behind and not broader than the elytra; sides and base with distinct marginal line; sides (when viewed from above) feebly rounded; disc shining, moderately convex and with large punctures very distantly placed at the sides and toward the base, between which are fine punctures evenly scattered over the entire surface; elytra about one-half longer than thorax, slightly depressed, sides moderately rounded with moderately impressed striæ, not coarsely nor closely punctured, interstices flat, very finely and sparsely punctured. Beneath coarsely and distantly punctured. Legs brownish ferruginous, antennæ paler. Length .30 inch; 7.5 mm.

Male.—Spur of anterior tibiæ broadly spatulate, inner spur of middle tibiæ short robust and unobscured. First joint of hind tarsus V-shaped.

Female.—Spur of anterior tibiæ acute but strong, inner spur of middle tibiæ slender, at least half the length of the outer. Hind tarsi normal.

In both sexes the anterior tibiæ have the outer edge above the upper tooth simple, not serrate.

Occurs in the Lake Superior region.

A. validus, n. sp.

Resembles *pinguis* but differs in the following characters:—Sides of thorax very broadly rounded, and broader than the elytra. Elytra comparatively shorter than in *pinguis* and scarcely one fourth longer.

This species has a much more robust facies than *pinguis*. The thorax is more convex and shining and with fewer large punctures at the sides and scarcely any at the base. The legs are more robust and the first hind tarsal joint of male is more strongly developed than in any of the species of the group. The color of the upper surface is

black, shining, with the elytra very slightly brownish. Sexual characters ♂ as in *pinguis*, female unknown. Length .32 inch; 8 mm.

Specimens were collected by Mr. Jas. Lockhart at Abittibi House, Hudson's Bay Territory, and kindly sent me by Mr. Townsend Glover, of Washington.

A. hamatus, Say, Long's Exped. ii, 277; Am. Entomol. Edit. Lec. 1, 183; *angularis*, Lec. Agass. Lake Super. p. 225; *sagittarius*, Harold, Ann. Ent. Soc. France, 1860, 615; Berl. Zeitschr. 1862, 163.

The description of Say is by no means characteristic and may with equal propriety be referred to several of the species of the group. Harold (Catalogus p. 1049,) has admitted the synonymy of Leconte's species with Say's (suggested as probable by Leconte himself List. p. 35) and with this before me I have no doubt whatever of the identity of *sagittarius* and *angularis*. Harold's description is exactly equivalent to the typical specimens of Leconte.

This species may be distinguished from all of those now known by the very (for this group) convex elytral interspaces and the rather closely and often crenately punctured striae. The thorax is sub-quadrate, sides very feebly rounded, basal edge distinctly margined at the sides. The coarse punctures are more numerous in this species and more densely placed towards the sides and base and with no fine punctures. The head appears unusually small, by the genae being very little prominent and obtusely rounded. The anterior tibiae have the outer edge above the upper tooth simple and not at all serrate. Length .27—.30 inch; 7—7.5 mm; (3—4 $\frac{1}{3}$ lines, Harold.)

Lake Superior, Illinois, Dacotah and Oregon? (Harold.)

A. hyperboreus, Lec. Agass. Lake Sup. p. 225; *omissus*, Lec. loc. cit. *concausus* ‡Hald. Journ. Acad. Ser. ii, vol. i, p. 103.

Similar in form to *pinguis*. Color black, shining, elytra occasionally entirely or with the base and sides only brownish. Head smooth, with but few coarse punctures in front. Thorax with distant coarse punctures over the entire surface, very sparse on the disc, more abundant toward the sides and base, and with very few of the finer punctures as described in *pinguis*; basal edge with scarcely any trace of marginal line. Elytra as in *pinguis*; striae faint, scarcely punctured, interstices flat, usually impunctured. Color beneath as in *pinguis*. Anterior tibiae with outer edge serrate above upper tooth. Sexual characters as in *pinguis*, but with the first joint of hind tarsus of male less developed. Length .24—.32 inch; 6—8 mm.

In the series before me I am unable to separate the species de-

scribed by Leconte as *omissus*. The interstrial spaces of the elytra are usually entirely without punctures, in some however the punctures are more or less distinct, and the separation of the latter species on this character above appears not to be warranted.

Specimens occur from Lake Superior to Oregon. Those from the latter region and Dakota are those in which the interspaces are punctulate.

A. torpidus, n. sp.—Elongate oval, black, shining. Head finely and sparsely punctured, front broadly rounded, broadly emarginate at middle, and slightly but very distinctly sinuate near the genæ. Thorax broader than long, convex, with coarse punctures at the sides and base, very distantly placed, and with very few finer punctures near the sides; sides moderately rounded, gradually narrower from base to apex (when viewed from above), distinctly margined, base margined at the sides. Elytra as in *pinguis* with the striæ rather broad, moderately deeply impressed; are coarsely but distantly punctured, interspaces flat, scarcely punctulate. Beneath black, coarsely not densely punctured, legs, brownish, antennæ pale, club darker. Anterior tibiæ distinctly serrate above the upper tooth. Sexual characters as in *pinguis*. Length .36—.40 inch; 9—10 mm.

This species may be readily distinguished by the very distinct sinuation of the sides of the front near the genæ, and by the very distinct marginal line at the sides of the base of the thorax. The elytra are not uniformly colored, but have the entire second interspace, the base of the third and the entire apex of the elytra, pale yellowish-testaceous, the entire sutural or first interspace black. The specimens are all colored alike, that I have seen

Occurs at Salt Lake, Fort Simpson and Oregon.

A. occidentalis, n. sp.—Oblong, black, shining. Head smooth, with very few and fine punctures anteriorly; genæ very obtuse, not prominent. Thorax broader than long, sides moderately rounded and distinctly margined, base feebly bisinuate and margined on each side of the middle; disc convex, smooth and with few coarse punctures toward the side and base, and no fine punctures. Elytra robust, sub-truncate at apex, one-fourth longer than the thorax; uniformly fuscous, but more commonly yellowish-testaceous, with the middle portion of each fuscous; surface distinctly striate, striæ distantly punctured, becoming obsolete toward apex, interstices flat, almost entirely impunctured. Beneath black, coarsely not densely punctured, and sparsely pubescent. Legs ferruginous-brown. Antennæ rufous, club dark. Pygidium exposed, moderately convex, coarsely and rather densely punctured. Anterior tibiæ with outer edge above upper tooth usually simple, rather sub-crenulate. Sexual characters as in *hyperboreus*. Length .32 inch; 8 mm.

Easily distinguished from all our species by the sub-truncate elytra the exposed pygidium, the almost entirely impunctured head, with the sides of the genæ very slightly prominent. The color of the elytra varies from a uniform brownish to those in which the sutural, apical

and basal margins are yellowish-testaceous, the remaining portion brownish, but with lines indicating the striæ paler. Occasionally the pygidium is not prominent, in this case the sub-truncation of the elytra is rendered still more evident.

Occurs from Montana westward to Oregon.

Section II contains the bulk of our species, usually of moderate or small size, several of them however large, rivaling those of the preceding group in length, although never very robust, but few of them are notably convex, many depressed. Many curious sexual characters have been noticed, and will be adverted to in their proper places. The scutellum is small, triangular, never longer than one-eighth or one-tenth of the elytra.

As the species are numerous, they may, for convenience, be divided, in accordance with the suggestions of Erichson, into groups.

Apex of hind tibiæ fringed with short equal spinules.

Thorax distinctly margined at base.

Head more or less tuberculate.

Mesosternum not carinate.

Clypeus sub-quadridentate.....Group C.

Clypeus sub-emarginate.

Sides of thorax, near hind angles, distinctly sinuate.....Group D.

Sides of thorax rounded, not sinuate behind.....Group E.

Mesosternum distinctly but slightly carinate.....Group F.

Head not tuberculate; clypeus emarginate and bidenticulate.....Group G.

Thorax not margined at base; head tuberculate; sides of scutellum emarginate.....Group H.

Apex of hind tibiæ fringed with unequal spinules.

Head distinctly tuberculate.

Elytra yellow, with black spots; base of thorax margined; hind tibiæ stout.....Group I.

Head not tuberculate.

Thorax not sinuate at sides near base.

Elytra strigose; opaque black; base of thorax margined; hind tibiæ slender.....Group K.

Elytra glabrous, shining; base of thorax more or less margined.....Group L.

Elytra pubescent, sub-opaque.....Group M.

Thorax distinctly sinuate on the sides near hind angles.

Clypeus denticulate; elytra oblong.....Group N.

Clypeus emarginate; elytra oval.....Group O.

In using the above table the student must, at all times, be careful that the specimens are perfect, that is, that the spinules at the tips of the tibiæ are not worn or accidentally reduced to an equal size, or that the long hairs fringing the sides of the tibiæ do not, by crossing the

field of vision, deceive into the belief that the spinules are unequal. In old specimens of those species in which the clypeus is denticulate, the teeth are apt to be worn down as also the spurs of the tibiæ, and the large teeth of the anterior tibiæ. In those that are pubescent, various accidental causes may remove the hairs, and experience alone here, as well as in the previously noted accidents, must be our guide.

Group C contains but one species. Form robust, clypeus rather deeply emarginate at middle, bounded by a tooth on each side and with another smaller, more acute tooth at one-third the distance toward the genæ. Front distinctly trituberculate along the line of the frontal suture. Prothorax with base distinctly margined. Scutellum small, elongate oval. Posterior tibial apical spinules short, equal. First joint of hind tarsi shorter than the upper spur, equalling the two following. Anterior tibiæ above the upper tooth strongly serrate.

A. denticulatus, Hald. Journ. Acad. Ser. II, vol. i, p. 104.—Oblong, piceous, shining. Head densely and coarsely punctured. Thorax convex, with sparsely placed coarse punctures, denser however at the sides; anterior angles paler. Elytra broader behind the middle, very convex and obtuse behind, deeply striate, striæ coarsely and closely punctured, interspaces feebly convex, with very distant fine punctures, sutural interspace brownish-ferruginous. Body beneath ferruginous, middle and hind femora and metasternum piceous. No sexual characters have been noticed. Length .30 inch; 7.5 mm.

The entire margin of the body is fimbriate with yellowish hairs, also the under surface and legs, the hairs of the hind tibiæ are especially long, giving the species the air of an *Aegialia*.

Occurs along the eastern base of the Rocky Mountains, from Bitter Root Valley to New Mexico.

Group D contains one species introduced from Europe, and now gradually spreading over our country. Head distinctly tuberculate, front broadly rounded, feebly emarginate at middle and slightly sinuate in front of the genæ, which are obtusely rounded and not prominent. Thorax margined at base, sides sinuate near hind angle. First joint of hind tarsi shorter than upper spur and slightly longer than the two following joints. Outer edge of anterior tibiæ with several rather coarse punctures above the upper large tooth.

A. fmetarius, Linn. Faun. Suec. 134; *nodifrons*, Randall, Bost. Journ. ii, 20.—Head and thorax black, the latter frequently with anterior angles rufous. Elytra pale ferruginous. Length .34 inch; 8.5 mm.

As this is a well known European species, introduced along the seaboard and Canada, a detailed description has been omitted, also the

synonymy. Full descriptions may be found by Erichson, *Insecten Deutschlands*, iii, 815; Harold, *Berl. Zeitscher.* 1868, 338.

Group E comprises species of variable form, color and size. The head is distinctly tuberculate, clypeus sometimes hemihexagonal or broadly rounded, more or less deeply emarginate. Thorax distinctly margined at base, sides rounded and not sinuate toward the apex.

Our species may be known by the following list.

- Head hemihexagonal, clypeus rather deeply emarginate, with the angles on each side of the emargination, more or less prominent, never broadly rounded..... 1.
- Head usually broadly rounded, clypeus feebly emarginate and broadly rounded on each side..... 2.
- 1.—Thorax black, elytra dark red; .29 inch.—Unalashka.....*aleutus*.
 Thorax and elytra similar in color, black or piceous.
 Form very robust; elytra scarcely one-fifth longer than wide; clypeal teeth prominent; .18—.20 inch;—Georgia and Florida.....*crassulus*.
 Form more elongate; clypeal teeth less prominent:
 Mesosternum strigose, not punctured; .30 inch.—Alaska.*ursinus*.
 Mesosternum punctured; .18—.22 inch.—East of Rocky Mountains.....*uricola*.
- 2.—Elytra rufo-testaceous, clouded; mesosternum strigose; .22 inch.—Alaska.....*congregatus*.
 Elytra dark red; .20 inch.—Middle States.....*foetidus*.
 Elytra piceous-black, anterior angles of thorax and apices of elytra rufous; .29 inch.—Alaska.....*arcticus*.
 Elytra black, interstices, especially at apex, finely alutaceous; .22 inch.—Alaska.....*pectoralis*.

Of the above species *arcticus* and *aleutus* are unknown to me in nature. These species have the mesosternum strigose, *congregatus* *ursinus* and *pectoralis*, while in the others it is rather coarsely punctured, as far as I have had the opportunity of examining. The prominence of the angles on each side of the clypeal emargination is subject to vary, and they may become rounded. In this case, the evidences of age are always apparent, and the acuteness of the edge is always obliterated as well as the prominence of the angles destroyed.

A. aleutus, Esch. *Entomograph.* i, 1822, 27; Harold, *Berl. Zeitschr.* 1863, 372.—“Oblong-ovate, moderately convex, shining black, anterior angles of thorax and the elytra dark reddish. Head punctured, in front slightly rugulose. Front trituberculate, clypeus emarginate at middle, genæ moderately prominent. Thorax with large and small punctures, sparsely punctured at middle, more densely at the sides, base on each side sub-sinuate. Elytra sub-crenately striate, interstices flat, distantly sub-seriately punctured. Palpi piceous, antennæ rufous, club infusated. Body beneath piceous-black, feet rufo-piceous. Length $3\frac{1}{2}$ lines.”

Unalashka. Entirely unknown to me.

A. crassulus, n. sp.—Robust, obovate, black, shining. Head very coarsely punctured in front, less densely at middle, front hemihexagonal; clypeus emarginate in front and distinctly denticulate on each side. Thorax very convex, broader than long, sides moderately rounded, base distinctly margined; surface smooth, evenly but sparsely and not coarsely punctured. Elytra robust, very convex, broader behind and obtuse at apex, scarcely one-fifth longer than broad, distinctly striate, striæ rather distantly punctured; interstices flat, more convex toward apex, very sparsely and finely punctured. Body beneath black, legs rufo-piceous, antennæ rufous, club darker. Length .18—.20 inch; 4.5—5 mm.

Occurs in Georgia and Florida. Easily known from all our species by its very robust form and by the clypeal teeth being more prominent.

I preserve the name under which it is found in the cabinet of Dr. Leconte. I cannot find that it has ever been either described or mentioned in catalogue.

A. ursinus, Motsch. Bull. Mosc. 1845, iv, 365, pl. 6, fig. 60. Mann. Bull. Mosc. 1853, iii, 218. Harold. Berl. Zeitschr. 1863, 386.—Elongate, convex, black, shining. Head sub-scabrous in front, punctured behind, distinctly trituberculate. Front hemihexagonal. Clypeus emarginate at middle, and on each side obtusely prominent. Thorax moderately convex, unequally punctured with coarse and fine punctures. Elytra moderately deeply striate, interstices feebly convex and very finely and sparsely punctured. Body beneath black, legs rufo-piceous, antennæ dark ferruginous, club greyish. Length .28 inch.

This species recalls the general form of *denticulatus*. Types are in Dr. Leconte's cabinet from Mannerheim and Motschulsky.

Occurs in Alaska also Kamtschatka.

A. ruricola, Mels. Proc. Acad. ii, p. 136. Harold, Berl. Zeitsch. 1863, 373, *curtus*, Hald. Journ. Acad. Ser. II, vol. i, p. 105, *aurelianus*, Harold, Berl. Zeitschr. 1863, 375.

A very widely diffused species, occurring over our entire territory from Canada to Texas, and westward to the eastern base of the Rocky Mountains, and presenting slight varieties when specimens from remote regions are compared singly, but vanishing when a series embracing our whole country is examined. The following description will suffice to render it recognisable among our other species.

Oblong, convex, shining, rufo-piceous or piceous, never entirely black, usually with the sides and always with the apices of elytra paler than the disc. Front hemihexagonal, clypeus distinctly emarginate at middle, on each side of which the edge is obtusely prominent and not broadly rounded; surface in front rugosely punctured, behind more finely punctulate and distinctly but slightly trituberculate. Thorax punctured, finely on the disc more coarsely and densely toward the sides. Elytra moderately deeply striate, and with coarse rather approximate punctures: interstices moderately convex, smooth,

impunctured. Body beneath variable in color, as the upper surface, but paler, legs rufous. Length .18—.22 inch; 4.5—5.5 mm.

I have united with *uricola* the species described by Haldeman and Harold, for the reason that I have been unable to detect any character that is of sufficient moment to define their difference. *A. aurelianus*, Harold, is an exact reproduction of Haldeman's *curtus*, and differs only from the types found in Pennsylvania in its rather larger size, darker color and (hardly appreciably) less densely punctured head and thorax. To be convinced that these are of no value, it is only necessary to consult a large series, or to place these differences parallel with those which are well known to occur in the still more widely diffused *granarius*.

The females are much more rare than the males, and have the angles on each side of the clypeal emargination more prominent and acute.

A. congregatus, Mann. Bull. Mosc. 1853, iii, 210. Harold, Berl. Zeitschr. 1863, 362.—Oblong, moderately convex, shining, piceous-black, elytra reddish-testaceous, with a broad lateral margin, scutellar space and broad sutural band darker. Head distinctly trituberculate, anteriorly coarsely punctured and rugose, posteriorly punctured; clypeus feebly emarginate, with the angles on each side broadly rounded and brownish-ferruginous. Thorax moderately convex, smooth, with entire surface punctured with fine and coarse punctures, more densely placed near the sides, lateral margin dark ferruginous. Elytra feebly striate, distinctly punctured; interstices nearly flat, slightly punctulate. Body beneath piceous, mesosternum strigose, legs rufo-testaceous. Length .22 inch; 5.5 mm.

A species easily recognisable by the color of elytra, and sculpture of mesosternum.

Occurs in Russian America. Typical specimens from the hand of Mannerheim are before me.

A. fœtidus, Fab. Ent. Syst. i, 40. Harold, Berl. Zeitschr. 1863, 364. *tenellus*, Say, Journ. Acad. Ser. I, vol. iii, p. 213.

An introduced species, and by no means abundant in this county. The characters given in the table will suffice to render it known when found. The mesosternum is punctured. Length .20 inch; 5 mm.

Occurs in the Middle States.

A. arcticus, Harold, Berl. Zeit. 1863, 361.—“Convex, elongate oval, piceous-black, shining; anterior angles of thorax and apices of elytra rufous. Head narrowed in front, punctured, and toward the margins rugulose, front trituberculate, clypeus emarginate at middle, genæ moderately prominent. Thorax with sides rounded, finely but remotely punctured, disc almost smooth, at sides with coarser punctures intermixed, base on each side sinuate. Elytra behind the middle slightly dilated, punctato-striate, interstices flat, subseri-

ately punctulate. Palpi and antennæ rufo-piceous, club cinereous. Body beneath piceous, legs rufo-piceous." Length $3\frac{1}{2}$ lines (.29 inch; 7.5 mm.)

Occurs in Russian America, Peninsula Kenai.

Easily known by the above characters. Unknown to me in nature.

A. pectoralis, Lec. Pacif. R. R. Rep. 47 parallel, App. i, p. 41.—Oblong, black, convex, shining. Head coarsely punctured and slightly rugulose in front, vertex smoother and more sparsely punctured; front distinctly trituberculate; clypeus broadly rounded, feebly emarginate at middle, genæ obtusely rounded, feebly prominent. Thorax strongly convex, sparsely and coarsely punctured; base distinctly margined. Elytra striate, striæ not coarsely but approximately punctured; interstices flat, very finely alutaceous, more coarsely toward apex, which is sub-opaque. Beneath black, legs piceous-black, antennæ rufous, club darker. Length .20 inch; 5 mm.

Type from San Francisco, others from Russian America.

The color of this species is very black, and may easily be recognised by the characters given in the table. The mesosternum is strigose. The elytral interspaces, especially toward the apex, exhibit decided traces of an alutaceous sculpture, which renders the apices of the elytra decidedly opaque. The specimens from Russian America have the elytral striæ scarcely as well defined, and the interstices are apparently flatter. These slight differences hardly seem to warrant the separation of them as distinct species.

Group F contains but two species, differing from those of the preceding group by the mesosternum being distinctly carinate between the middle coxæ.

A. granarius, Linn. Syst. Nat. i, 2. p. 547. Harold, Berl. Zeitschr. 1863, 347. *quadrituberculatus*, Fab. Syst. El. 75. *metallicus*, Hald. Journ. Acad. Ser. ii, vol. i, p. 105. *spretus*, Hald. id. p. 106.

This species is cosmopolitan, occurring in every quarter of the globe and very abundant wherever it occurs. Specimens have lately been received from various parts of maritime California. Length .16—.25 inch; 4—6 mm.

So much space has already been given to the description of this species that it is not deemed advisable to add anything further, the student is referred to that of Harold above cited.

A. vittatus, Say, Journ. Acad. v, 191. Harold, Berl. Zeitschr. 1863, 355.—Black, shining, moderately elongate and sub-cylindrical; elytra with a basal and apical rufous spot, often confluent into a broad stripe. Head densely and finely punctured, front distinctly trituberculate, clypeus feebly emarginate. Thorax punctulate, more densely toward the sides. Length .14—.20 inch; 3.5—5 mm.

This species is readily known by the few characters above given.

It occurs rather abundantly from the Middle States to Kansas, those from the western region being smaller.

Group G contains a single species, differing from all our species in appearance, in having the thorax notably narrower behind and the hind angles broadly rounded. The elytra are oval, narrower at base than at middle, at the bases of the thorax and elytra apparently more distant than in any other of our species. The head is moderately convex, not tuberculate, clypeus rather deeply emarginate and on each side elevated into a very distinct acute tooth. The base of thorax is distinctly margined, the mesosternum feebly carinate, and the anterior tibiæ not serrate above the upper tooth. First joint of hind tarsi slightly longer than the second and third together. No remarkable sexual characters have been noticed.

A. nevadensis, n. sp.—Moderately elongate, black, shining. Head moderately convex, not tuberculate, rugose, especially in front and at sides, broadly rounded in front, genæ moderately prominent; clypeus emarginate and on each side distinctly denticulate. Thorax rounded and narrower behind, hind angles broadly rounded, base broadly rounded and distinctly margined; surface finely not densely punctured, with coarser punctures intermixed, more numerous at the sides. Elytra oval, humeri rounded, surfaced distinctly striate, striæ feebly punctured at base, more distinctly toward apex, interstices feebly convex and sparsely punctulate. Body beneath black, mesosternum in front of coxæ coarsely punctured or cribose, between coxæ carinate. Legs rufopiceous, antennæ luteous. Length .22—.30 inch; 5.5—7.5 mm.

This species is readily known by the characters given. The wings are very feebly developed. It varies in color from black to brown. In some the elytral striæ are fainter, the interspaces flatter and impunctured.

Specimens were collected in Nevada by Mr. Gabb; others have been sent by Mr. Henry Edwards, probably from the same region.

Group H contains two small elongate species characterised by the absence of the basal prothoracic line. The genæ are very feebly prominent.

A. lividus, Oliv. Ent. i. 3, p. 86, pl 26, fig. 222. Erichs. Ins. Deutsch. 3, p. 537. —Elongate, pale testaceous; head, disc of prothorax and elytra, and sutural narrow space, brownish. Length .18—.20 inch; 4.5—5 mm.

Introduced from Europe, occurring in our Southern States, as far west as New Mexico.

A. vestiarius, n. sp.—Elongate, piceous-black; margin of head, sides of thorax, sutural and lateral margins of elytra piceo-rufous, shining. Head distinctly tuberculate, middle tubercle elevated into a very short horn, surface sparsely punctured at the margins, more densely on the front; clypeus distantly emarginate, genæ not prominent. Thorax broader than long, convex,

apparently narrower in front, coarsely but sparsely punctured, with few finer punctures intermixed; sides moderately rounded, base not margined. Elytra moderately deeply striate, striæ closely punctured at base, scarcely punctured at apex, interstices moderately convex, sparsely punctulate at apex only. Body beneath piceo-rufous; legs rufous. Mesosternum between the coxæ distinctly carinate, in front strigose. Antennæ testaceous. Length .16 inch; 4 mm.

Easily known from *lividus* by its color, coarsely punctured and more convex thorax.

Specimens collected near St. Augustines, Florida, and presented to me by Mr. Levi Taylor.

Group I contains but few species easily known among the others by the yellow elytra with variously arranged black spots, and by the tuberculate head. All have the thorax distinctly margined along the basal line. The hind tibiæ are rather stout and fringed at apex, with unequal spinules. The hind tarsi have the first joint equal in length to the longer tibial spur. The sexual characters may be found in the more strongly tuberculate head, and more coarsely punctured thorax.

Our species are as follows:

Clypeus distinctly angulate on each side of emargination..... *serval*.

Clypeus broadly rounded on each side.

Elytra with lateral black vitta..... *inquinatus*.

Elytra with black spots only, no lateral vitta.

.18—.22 inch; California. Elytra with the inner series of striæ joining the outer series..... *pardalis*.

.28 inch. Canada and Maine. Elytra with the three inner striæ nearly equal, not confluent with the outer three..... *leopardus*.

A. *serval*, Say, Bost. Journ. i, 1837, p. 177; Am. Ent. Ed. Lec. ii, 651.

A pretty little species easily known by the clypeus being distinctly angulate or broadly denticulate on each side of the emargination. The head is very coarsely punctured, and toward the sides and front rugose, genæ not prominent. Thorax moderately convex, sides feebly rounded, surface coarsely punctured, rather more densely toward the sides, less coarsely and densely in the female. Elytra pale yellowish as in *inquinatus*, with the lateral and apical margins reddish, and with black spots arranged as follows; a small spot at base of fifth interspace, another on the fourth slightly in front of middle and one slightly behind the latter and usually confluent with it on the third interspace, sometimes extending on the second, a sinuous band composed of confluent spots on the second, third, fourth and fifth interspaces about one-fourth from the apex, lateral stripe occupying portions of the seventh, eighth and ninth interspaces, gradually fading into the rufous margin. Body beneath brownish, legs paler. Length .18 inch; 4.5 mm.

The rufous marginal space becomes broader at apex extending about a sixth of the length of the elytra, and usually darker at its an-

terior portion in the second and third interspaces, so that there appear to be two additional black spots behind the sinuous transverse band above mentioned. The frontal margin is rufous, also the anterior angles and frequently the sides of the thorax.

This species is by no means common in collections, two species only are known to me, one from Pennsylvania and another from the Indian Territory, near Fort Cobb, showing at least a wide distribution.

A. inquinatus, Herbst, Füssl. Arch. 1784, V, 2, p. 6, pl. 19, fig. 5. Erichs. Ins. Deutsch. iii, p. 839. *maculipennis*, Mels. Proc. Acad. ii, p. 137.

This species, like *granarius*, appears to have become almost cosmopolitan, and is abundant over our entire country east of the Rocky Mountains. Much of the synonymy of the European authors has been omitted as unnecessary to the object of the present essay.

From all our species which have the clypeus on each side of the emargination rounded, *inquinatus* may be known by the broad lateral black stripe. The sides and apex are not rufous as in *serval*. The black spots are, a basal spot at base of fifth interspace, one slightly behind this, irregular in outline, occupying portions of the fourth, third and second; behind the middle a sinuous transverse band joining the lateral stripe and extending to the third stria. The head is usually black, the anterior angle of the thorax rufous.

This species is slightly longer than *serval*, and occurs abundantly in almost every portion of our country and Europe.

A. pardalis, Lec. Pacif. R. R. Rep. App. i, p. 41, 1857.—Head black, with rufous front and sides, coarsely punctured and rugose near the margins. Thorax more convex than in *inquinatus*, sides broadly rounded and rufous or rufo-testaceous, surface coarsely but sparsely punctured, with finer punctures between. Elytra somewhat broader behind the middle, more convex than in *inquinatus*, and more obtuse behind, faintly striate, striae distinctly but coarsely and closely punctured, pale yellowish-testaceous, with black spots arranged as follows; at base of fifth interspace, another slightly behind the scutellum on second and third, another behind this on fourth, and another about the middle on the second and third, a sigmoid transverse patch on the sixth, fifth and fourth, and three lateral elongate spots on the seventh, eighth and seventh again. Body beneath brownish, abdomen, legs and parts of mouth rufo-testaceous. Length .22 inch; 5.5 mm.

The series of spots on the disc of elytra are at times confluent, so that they form nearly a semi-circle on each elytron, the lateral spots frequently join and form an irregular stripe, but is always irregular and indicates its origin in the confluence of smaller spots, while the broad stripe of *inquinatus*, extends along the greater part of two or three interspaces. It may also be known by the sides of the head, in front of the genæ, being slightly sinuous.

Abundant along the Pacific slope from San Francisco to Vancouver.

A. leopardus, n. sp.—Similar in form to *inquinatus*, but large more robust. Head coarsely not densely punctured, not rugose in front, sides rufous. Thorax moderately convex, surface rather densely and coarsely punctured with finer punctures intermixed, sides feebly rounded and broadly rufous. Elytra slightly broader behind the middle, moderately deeply striate, with punctures not very closely placed, interspaces feebly convex, more distinctly toward the apex, very sparsely punctulate; color yellowish, slightly reddish in more recent specimens, and with black spots, a small spot at base of fifth interval, one slightly in front of middle on the fifth and fourth, usually joining, another slightly behind it on the second and third, a sinuous band at apical fourth on interspaces five, four, three and two, usually extending forward along the second interval, joining the spot in front, usually a small black spot slightly behind the humeral angle on the seventh and eighth intervals. Body beneath piceous. legs and parts of mouth testaceous. Length .28 inch; 7 mm.

Differs from all our species of the group by the greater convexity of the elytral interspaces. The striæ of the inner series extend nearly to apex of elytra, are parallel and not confluent with those of the outer series; the fifth and sixth striæ alone join. This arrangement of the striæ is the rule in Group B, and only rarely occurs in any of the following groups.

Maine and Eastern Canada.

Group K contains but few species easily known by thier surface being entirely opaque. The head and thorax is always densely and rather coarsely punctured and the elytra faintly striate, with interspaces flat, either finely longitudinally wrinkled, or muricately punctured. The thorax is distinctly margined at base. The hind tibiæ with the upper oblique line of spinules almost entirely obliterated. The first joint of the hind tarsi is not as long as the two following together, although equalling the upper spur.

Our species are distinguished as follows.

Clypeus on each side of emargination with an acute tooth.....**lutulentus**.

Clypeus on each side of emargination rounded.

Mesosternum flat..... **stupidus**.

Mesosternum carinate between the coxæ.....**lentus**.

A. lutulentus, Hald. Proc. Acad. i, 1842, p. 304; Journ. Acad. Ser. ii, vol. 1, p. 104.—Clypeus rather deeply emarginate at middle, and on each side an acute prominent tooth, distinctly sinuate in front of the genæ. Head coarsely, densely and very equally punctured, moderately convex and with very faint traces of the three tubercles, so prominent in the preceding group. Thorax moderately convex, sides feebly rounded, surface very densely and coarsely punctured. Elytra elongate oval, moderately convex, feebly striate, striæ with traces of distant punctures; interspaces flat, very finely longitudinally wrinkled and sub-quadrate. And with very minute and fine erect hairs, scarcely to be

seen except when viewed between the lens and a strong light. Body beneath black, shining, legs piceous-black. Mesosternum flat, not carinate. Length .28—.30 inch; 7—7.5 mm.

In all the specimens before me the apices of the elytra are slightly prolonged and each rounded at tip, they are probably all males.

Occurs in the Middle and upper Southern States.

A. stupidus, n. sp.—Oblong, robust, black, sub-opaque. Head coarsely and moderately densely punctured less densely at the sides and anterior margin. Clypeus emarginate at middle and round on each side and with a very faint sinuation in front of genæ. Thorax moderately convex, sides rounded, surface densely punctured but less coarsely and densely than in *lutulentus*, base with entire marginal line. Elytra moderately convex, sides sub-parallel, moderately striate with scarcely any traces at apex, and rugose and muricate becoming smoother toward the apices of the elytra. Body beneath black, shining, legs piceous. Mesosternum not carinate. Length .20—.22 inch; 5—5.5 mm.

In one specimen before me the margin of the elytra near the apex is slightly sinuate (♀?) and slightly more prolonged than in two others (♂?) in which the margin is entire and the apex more obtuse. This species is less opaque than *lutulentus* and the minute hairs rather more evident and apparently greyish.

The only specimens known are from Georgia.

A. lentus, n. sp.—Elongate oval, slightly depressed, brownish ferruginous, sub-opaque. Head coarsely but sparsely punctured, less densely at the sides, and in front nearly smooth. Clypeus feebly emarginate, rounded on each side and not sinuate in front of genæ. Thorax moderately convex, sides feebly rounded, base distinctly margined, surface rather coarsely and evenly punctured. Elytra elongate oval, moderately deeply striate with scarcely any traces of punctures in the striæ, interspaces flat transversely wrinkled and muricate and with few very minute hairs. Body beneath shining ferruginous. Mesosternum, between the coxæ, distinctly carinate. Length .15 inch; 4 mm.

The elytral striæ of this species are equally deep at base and apex, the inner striæ being long, and extending nearly to apical margin and not confluent with the outer series of striæ. The margin near apex is very faintly sinuate in both specimens before me. It may be possible that the color of this species is due to immaturity, it is however less opaque than either of the preceding and may readily be known by the carinate mesosternum.

Pennsylvania and Georgia; rare.

Group L contains species agreeing in having the elytra entirely glabrous and shining and without any traces of pubescence. They vary much in other characters so that were it deemed advisable, several groups could be constructed as may be seen from the following table, where may be found species with slender and stout hind tibix and

some with and without the clypeus angulate on each side of the emargination. Two species only have the mesosternum carinulate.

The following table will serve to distinguish the species.

Anterior tibiæ strongly tridentate.

Mesosternum distinctly carinulate between the coxæ.

Clypeus broadly rounded at each side.

Hind tibiæ stout; striæ of elytra nearly without punctures.....**rubeolus.**

Hind tibiæ slender; striæ distinctly punctured.....**stercorosus.**

Clypeus bidenticulate.....**militaris.**

Mesosternum not carinulate; flat or concave between the coxæ.

Thorax red or yellowish-testaceous, never black.

Small species, .16—.22 inch.

Clypeus distinctly angulate on each side of emargination, color uniform rufous; hind tibiæ stout; striæ serrately punctured; interspaces densely punctulate.....**rubiginosus.**

Clypeus rounded on each side of emargination.

Hind tibiæ stout. Color reddish, elytra paler. striæ not or very faintly punctured.....**ægrotus.**

Hind tibiæ slender. Color yellowish-testaceous, striæ distinctly punctured.....**consentaneus.**

Large species, .30—.35 inch; color ferruginous.

Thorax not margined at base, very shining.....**politus.**

Thorax distinctly margined at base.

Disc of thorax coarsely punctured.....**rubidus.**

Thorax punctured only at sides.....**concausus.**

Thorax black.

Surface with distinct æneous lustre; tibiæ slender.....**subæneus.**

Surface shining, without metallic lustre.

Clypeus feebly emarginate, broadly rounded on each side.

Elytra with alternate interspaces yellow.....**alternatus.**

Elytra ferruginous at tip.....**terminalis.**

Clypeus distinctly angulate on each side of emargination.

Abdomen and legs piceous or black.....**coloradensis.**

Abdomen and legs yellow.....**bicolor.**

Clypeus truncate at middle and an acute tooth on each side.....**dentiger.**

Anterior tibiæ with the upper tooth nearly obsolete; at tip

sub-truncate, inner edge sinuate; hind tibiæ stout;

Color pale yellowish-testaceous; mesosternum

flat.....**phalerioides.**

A. rubeolus, Beauv. Ins. Afr. et Am. p. 90, pl. 2, fig 4; *copronymus*, Mels. Proc. Acad. ii, 1844, p. 136.—Elongate, pale ferruginous, shining. Head sparsely and finely punctured, clypeus feebly emarginate at middle. Thorax with disc smooth, coarsely punctured toward the sides. Elytra not deeply striate, striæ very feebly punctured interspaces flat, smooth. Hind tibiæ stout, mesosternum distinctly carinate. Length .14—.18 inch: 3.5—4.5 mm.

Easily distinguishable from any of our species by the characters

given in the tables. It differs moreover from *stercorosus* in having the color of the elytra uniform which in the latter species is always clouded.

Occurs from the Middle States to Texas.

A. stercorosus, Mels. Proc. Acad. ii, 1844, p. 136.

Similar in form and color to *rubeolus* but less robust. Head more densely punctured. Thorax finely punctured on the disc with coarse punctures toward the sides. Elytra ferruginous with darker clouding, not deeply striate, striæ more distinctly punctured than in the preceding species. Length .14—.16 inch; 3.5—4 mm.

Not rare in the Middle States and southward.

A. militaris, Lec. Proc. Acad. 1858, p. 65.—Elongate, ferruginous, shining. Head rather coarsely granulose, clypeus emarginate at middle and on each side an acute prominent tooth. Thorax rather coarsely not densely punctured, sides moderately rounded, base distinctly coarsely not densely punctured, sides moderately rounded, base distinctly margined. Elytra parallel, faintly striate striæ finely punctured; interspaces flat, coarsely punctured. Mesosternum distinctly carinate. Length .20—.24 inch; 5—6 mm.

Notwithstanding the original description, the mesosternum will be found to be distinctly carinate. When examined with very high power the elytral interspaces may be seen to be very minutely and densely punctulate. One specimen before me ♀ has the spur of the anterior tibia slender and acute, two others ♂ show no traces whatever of any spur. The anterior tibiæ are normal in their construction and not truncate as in *Coptochirus*.

Three specimens San Diego, Cal.

A. rubiginosus, n. sp.—Elongate, ferruginous, shining. Head densely not coarsely punctured; clypeus emarginate at middle, angulate on each side of emargination. Thorax moderately convex, densely not coarsely punctured, sides moderately rounded, base distinctly margined. Elytra moderately convex, sides slightly rounded rather deeply striate, striæ closely punctured, interspaces feebly convex, densely punctulate. Body beneath rufous, mesosternum flat. Length .22 inch; 5.5 mm.

Male.—Spur of anterior tibia slender, strongly curved backwards, inner spur of middle tibia slender and short.

Closely resembling *militaris* differing in the sexual characters, and by the front being nearly angulate and not bidentate, also by the flat not carinate mesosternum.

One specimen from Camp Grant, on San Pedro River, Arizona.

A. ægrotus, n. sp.—Moderately elongate, shining, pale reddish, elytra paler than the head and thorax. Head smooth very faintly punctulate, clypeus feebly emarginate at middle. Thorax moderately convex, very faintly punctulate with a few coarser punctures on each side of middle, sides feebly rounded and of paler color than the disc. Elytra oval, not obtuse at tip, moder-

ately convex, feebly striate, striæ with very fine punctures, interspaces flat, smooth. Body beneath similar in color to the elytra. Mesosternum flat, hind tibiæ rather stout. Length .16 inch; 4 mm.

Occurs in North Carolina.

A. consentaneus, Lec. Agass. Lake Super. p. 225.—Moderately elongate, shining, yellowish testaceous. Head sparsely punctured, more densely at the sides and in front; clypeus feebly emarginate and on each side broadly rounded, Thorax moderately convex, disc feebly punctured, more densely at the sides. Elytra elongate oval, moderately convex, rather deeply striate, striæ serrately punctured, interspaces moderately convex, sparsely and finely punctulate. Beneath pale yellowish testaceous. Hind tibiæ slender. Anterior tibiæ normally tridentate. Length .20 inch; 5 mm.

The thorax and head are usually darker than the elytra, the disc of this former being slightly clouded with rufous. Resembles superficially *phalerioides*, the differences will be given under that species.

Occurs in Canada, Missouri and Kansas, but is not common.

A. politus, n. sp.—Oblong, smooth, shining, pale ferruginous and broadly rounded on each side. Thorax moderately convex, smooth, shining and with few very coarse punctures as the sides; sides moderately rounded, hind angles broadly rounded, base not margined. Elytra moderately convex, shining, faintly striate, striæ very finely punctured, interspaces flat, smooth, impunctured. Body beneath pale ferruginous, smooth shining. Hind tibiæ stout. Spur of anterior tibia of male broad spatulate and truncate at tip. Length .32 inch; 8 mm.

The lateral margin of the thorax is more distinctly reflexed than in either of the following species and more broadly at the basal angle so that immediately in front of the hind angle the thorax is slightly concave. It is remarkable that one of the characters of the males of Group B should reappear in this species. The hind tarsi are slender and the first joint nearly as long as the three following.

The unique in my cabinet is from Texas.

A. rubidus, Lec. Pacif. R. R. Rep. App. i, p. 41.—Length .30—.35 inch; 7.5—9 mm.

Occurs near San Francisco and southward; not rare.

A. concavus, Say, Journ. Acad. iii, 1823, p. 214, *laevigatus*, Hald. Journ. Acad. Ser. ii, vol. i, p. 103.

These two species resemble each other closely but may be readily distinguished by the thorax of the former being very coarsely but sparsely punctured over its entire surface while the latter has punctures only at the sides. The clypeus of *rubidus* is also more distinctly angulate on each side of the emargination. Both species are shining ferruginous or brown. Elytra rather deeply striate and finely serrately punctured. Interspaces feebly convex and nearly smooth. Inner

spur of middle tibia ♂ stout, obtuse at tip, one-half shorter than the outer spur. Length .32—.38 inch; 8—9.5 mm.

Specimens are from Georgia, Kansas and Nebraska.

A. subæneus, Lec. Pacif. R. R. Rep. 1857, App. i, p. 41.—Oblong, sub-parallel, black, with æneous lustre. Head coarsely punctured more densely toward the sides; clypeus feebly emarginate and rounded on each side; genæ feebly prominent. Thorax very convex, transversely coarsely punctured, more densely toward the sides; sides nearly straight, hind angles nearly rectangular, base distinctly margined. Elytra oblong, robust, sides sub-parallel, faintly striate, striæ finely punctured, interspaces flat, very moderately and sparsely punctulate and alternately distinctly alutaceous. Body beneath black, legs piceous, hind tibiæ rather slender. Length .18—.20 inch, 4.5—5 mm.

The elytra are not uniformly black but have a broad yellow vitta on each occupying the second, third and fourth interspaces, usually irregular on the outer side and extending to the tip of the elytra. Other specimens have the alternate interspaces yellow, the bands being more or less interrupted and not attaining the apex, and one specimen has the second and fourth interspaces yellow, united near apex by an oval spot, and smaller spots at bases of second to sixth interspaces. The apices of the elytra are usually finely alutaceous and the epipleuræ in several specimens rufous.

Occurs at San Francisco, Cal.

A. alternatus, n. sp.—Oblong, black, shining. Head coarsely not densely punctures except at sides and in front. Clypeus feebly emarginate at middle, broadly rounded on each side and very slightly sinuate in front of the moderately prominent genæ. Thorax less convex than in *subæneus*, sides moderately rounded, base faintly margined near the sides, not margined at middle, surface coarsely punctured, coarser and more dense at the sides. Elytra oblong parallel, moderately convex, striate, striæ coarsely punctured, interspaces flat, alternately yellow, and coarsely punctured more densely toward the sides and apex. Body beneath black, legs piceous, hind tibiæ slender. Length .18—.24 inch; 4.5—6 mm.

Varies also in color as in *subæneus*, one specimen before me has the bases of intervals two to six yellow, and the second, fourth and six intervals yellow to apex, another has only the second and fourth, while still another is apparently entirely black, but a strong light shows the alternate intervals very distinctly paler than the others. It resembles *subæneus* in form, but may easily be known by the absence of metallic lustre and the rather coarse punctures of the elytra.

Several specimens from Bitter Root Valley, and one from an unknown region of California.

A. terminalis, Say, Journ. Acad. iii, 1823, p. 213.—Elongate oval, moderately robust, black, shining. Head coarsely punctured and rugose in front; clypeus feebly emarginate and on each side broadly rounded. Thorax sparsely punc-

tured on the disc, more densely and coarsely toward the sides which are moderately rounded; base finely margined. Elytra oval, broader behind the middle, moderately striate, striæ rather coarsely punctured, interspaces flat, distantly punctulate; apices of elytra rufous. Body beneath and legs black, hind tibiæ slender. Length .20 inch; 5 mm.

Occurs from Pennsylvania to Illinois.

A. coloradensis, n. sp.—Elongate oval, black shining. Head coarsely punctured; clypeus emarginate and on each side elevated into an acute tooth; front behind the emargination distinctly impressed. Thorax moderately convex, sides feebly rounded, base distinctly margined, surface coarsely but sparsely punctured with finer punctures intermixed. Elytra broader behind the middle, moderately striate, striæ finely punctured, interspaces very feebly convex and sparsely obsolete punctulate. Body beneath black, legs piceous, hind tibiæ stout. Inner spur of middle tibia of male slightly hooked at tip. Length .26 inch; 6.5 mm.

For the unique in my cabinet, I am indebted to Mr. James Ridings, who found them rather abundantly in Colorado.

This species recalls the form of *ursinus*.

A. bicolor, Say, Journ. Acad. iii, 1823, p. 212.—Oblong oval, slightly depressed, black, shining. Head coarsely punctured, more densely at the sides and front; clypeus emarginate and rather strongly angulate on each side. Thorax moderately convex, sides feebly rounded, surface coarsely punctured with finer punctures intermixed, base distinctly margined. Elytra oblong, rather deeply striate, striæ finely punctured, interspaces moderately convex and punctulate. Pro- and mesosternum piceous, metasternum, abdomen and legs yellowish. Length .18—.24 inch; 4.5—6 mm.

The elytra are usually black or piceous, but in several specimens before me they are dark ferruginous with the alternate intervals (2—4—6) showing paler rounded spots. The species may be easily known from any in our fauna by its dark color above and yellow legs and abdomen.

Occurs from Canada to Texas.

A. dentiger, Lec. Proc. Acad. 1858, 65.—Oblong oval, piceous black, shining. Head sparsely but coarsely punctured and finely rugose in front; clypeus at middle truncate and on each side an acute slender tooth, outside of which the clypeus is rather deeply sinuate. Thorax moderately convex, sparsely but coarsely punctured on the disc, more densely at the sides, sides feebly rounded gradually narrower in front, base distinctly margined. Elytra broader behind the middle, feebly striate, striæ distantly punctured, interspaces flat, very sparsely and finely punctulate. Body beneath piceous. *Male*. Spur of anterior tibia slightly arcuate, and hooked at tip; inner spur of middle tibia short broad and, deeply emarginate at tip. *Female*. Unknown. Length .26 inch; 6.5 mm.

This species is easily known in the group by the two slender teeth of the clypeus. In the preceding species the angulation of the clypeus is broad at base, the teeth of *dentiger* are slender.

A. phalerioides, n. sp.—Elongate oval, pale yellowish testaceous, shining. Head nearly smooth, finely and very sparsely punctulate; clypeus very feebly emarginate and broadly rounded on each side. Thorax moderately convex, sparsely punctured, sides moderately rounded, base not margined at middle. Elytra elongate oval, yellowish testaceous, slightly clouded with fuscous, feebly striate, striæ finely punctured; interspaces moderately convex, very sparsely punctulate. Body beneath pale yellowish testaceous, hind tibiæ slender. Anterior tibiæ nearly truncate at apex, teeth obtuse, the upper obsolete, inner edge slightly sinuous. Length .24 inch; 6 mm.

A curious species resembling *consentaneus*, in appearance, but may be easily known by its stouter hind tibiæ, and by the peculiar conformation of the anterior.

The specimens in our cabinets are from the Middle States, probably from near the sea coast.

Group M contains several species with the elytra distinctly pubescent over the entire surface and more opaque than in the preceding group.

The species in our fauna are as follows:

Elytra luteous with fuscous cloud; thorax at base margined.

Anterior tibiæ, ♂, strongly sinuate within, spur hooked..... **Walshii**.

Anterior tibiæ, ♂, normal, spur broad, truncate..... **femoralis**.

Elytra reddish-yellow; thorax not margined at base.

First joint of hind tarsus equalling the last four together..... **rubripennis**.

A. femoralis, Say, Journ. Acad. iii, 1823, p. 215.—Oblong, head and thorax black, shining, elytra luteous with broad fuscous space, sub-opaque and pubescent. Head sparsely punctured, margin very feebly reflexed; clypeus feebly emarginate and rounded on each side. Thorax moderately convex, very sparsely punctured, at the sides luteous, sides moderately rounded, base distinctly margined. Elytra luteous with broad fuscous space varying in extent, striæ moderately deep, serrately punctured, interspaces convex usually coarsely punctulate especially near the striæ. Body beneath piceous, femora pale luteous, tibiæ darker. Length .22—.26 inch; 5.5—6.5 mm.

Male.—Elytra more coarsely punctulate, spur of anterior tibia broad, thick and truncate at tip.

Female.—Elytra more sparsely punctulate, spur of anterior tibia slender and acute at tip.

This species resembles *consputus*, of Europe, but may be known by the distinct marginal line at base of thorax as well as by the sexual character of the male. The margin of head is much less distinctly reflexed than in the following species and it is this difference alone that must be relied on to distinguish the female of *Walshii* from *femoralis*. The tibiæ are always much darker in color in the latter species than the femora, while in the former the legs are of one color. This can not however be relied upon to separate them by being a character of comparative, little value from the tendency to variation.

Occurs from Pennsylvania to Kansas. Numerous specimens of this species have been sent me by Dr. Summers from the neighborhood of St. Louis, where it appears to be common.

A. Walshii, n. sp.—Similar in color, form and general appearance to *femoralis* but differing as follows: Head with margin more broadly reflexed, sides of thorax more broadly luteous, base distinctly margined. Elytra moderately deeply striate, striæ feebly punctured; interspaces moderately convex, very sparsely or not at all punctulate. Body beneath as in *femoralis*, tibiæ less fuscous. Length .20—.24 inch; 5—6 mm.

Male.—Anterior tibiæ sinuate within, inner apical angle truncate, spur long, truncate and hooked at tip, upper tooth of outer edge small, becoming obsolete.

Female.—Anterior tibiæ normal, upper tooth small, more distinct, spur slender, acute.

Easily known by the pubescent elytra, and the peculiar sexual characters. In both these species the pubescence consists of short yellowish sub-erect hairs, arranged in a row on each side of each interspace.

Illinois. Dedicated to B. D. Walsh, in whose sudden death economic entomology suffered a serious loss.

A. rubripennis, n. sp.—Oblong, slightly depressed, black shining; elytra reddish-yellow, sub-opaque and pubescent. Head sparsely and finely punctulate, clypeus broadly rounded, not emarginate. Thorax moderately convex, coarsely but sparsely punctured with finer punctures intermixed, sides moderately rounded, base not margined. Elytra finely striate, striæ finely punctured, interspaces feebly convex, sparsely and irregularly punctured. Body beneath black, shining, tarsi rufous. First joint of hind tarsi as long as last four together. Females only are known, the tibial spurs all slender and acute. Length .28—.30 inch; 7—7.5 mm.

Two specimens, one from Canada and another from Pennsylvania.

The elytra are much more sparsely pubescent than in either of the two preceding species.

Group N contains a single species in our fauna, easily known by the unequal spinules of the apex of the hind tibiæ, the sides of the thorax distinctly sinuate near the hind angle, and by the sides of the elytra being parallel and the clypeus denticulate.

A. oblongus, Say, Journ. Acad. iii, 1823, 215. *badipes*, Mels. Proc. Acad. 1844, p. 135.—Oblong, black, shining. Head finely punctured, more densely at the sides; clypeus deeply emarginate at middle and acutely dentate on each side. Thorax broad, moderately convex, coarsely but sparsely punctured, with finer punctures intermixed; sides moderately rounded, sinuate near the hind angles, base distinctly margined. Elytra parallel, obtuse at tip, not deeply striate, striæ moderately punctured, interspaces flat, finely and sparsely punctulate. Body beneath piceous, legs black. Length .36 inch; 9 mm.

Male.—Spur of anterior tibiæ broad, truncate and hooked at tip or feebly emarginate; inner spur of middle tibiæ short, robust.

Female.—Spur of anterior tibiæ robust but acute at tip; inner spur of middle tibiæ robust but longer than in male.

This species occurs from Pennsylvania to Colorado.

Group O contains also but one species, readily known by the unequal spinules fringing the apex of the hind tibiæ, head not tuberculate, thorax distinctly sinuate at the sides near the basal angles, basal marginal line wide and deep, clypeus emarginate and broadly rounded, elytra oval, mesosternum between the coxæ feebly convex, hind tibiæ stout, first joint of the hind tarsi equal to the three following united.

A. ovipennis, n. sp.—Oblong, brownish or piceous, moderately shining. Head not densely nor coarsely punctured; clypeus emarginate at middle, broadly rounded on each side; genæ prominent. Thorax broader than long, narrower at base, sides broadly rounded in front, rather deeply sinuate near the hind angles, base broadly rounded, margined line broad, deep, and coarsely punctured; surface moderately convex, very coarsely and deeply punctured. Elytra oval, broadest at middle, convex, rather deeply striate, striæ rather finely and distantly punctured, interspaces moderately convex, very sparsely punctulate. Body beneath piceous black, legs rufo-piceous. Mesosternum coarsely punctured, between the coxæ convex, sub-carinate. Epipleuræ visible from above, humeral angles consequently dentiform. Length .30—.34 inch; 7.5—8.5 mm.

The three specimens before me show no sexual characters among themselves. The species is one of the most distinct in our fauna, and may readily be distinguished from any *Aphodius* known to me by the characters above given.

Found under stones in dry places at Fort Tejon, Cal.

Aphodius cadaverinus, Mann. Bull. Mosc. 1843, ii, 261.

The description of this species (from Russian America) is too short and uncharacteristic to enable me to define its position.

DIALYTES, Harold.

Dialytes. Harold, Col. Hefte, V, 1869, 101.

D. truncatus, Mels. Proc. Acad. 2, 135. *corvinus*, Hald. Journ. Acad. Ser. 2, vol. 1, p. 104. Harold, loc. cit.—Oblong, black, convex. Head strongly deflexed, coarsely but sparsely punctured; front hemihexagonal, sides very feebly rounded; clypeus feebly emarginate. Thorax broader than long, convex, coarsely but not closely punctured, sides feebly rounded in front, deeply but gradually sinuate at base, base distinctly margined. Elytra oblong, broader behind the middle, strongly convex and very obtuse at apex, humeri dentiform; surface moderately deeply striate, striæ punctured, interspaces flat but strongly carinate near the apex, impunctured. Body beneath sub-opaque, coarsely punctured, legs brownish ferruginous, coarsely punctured, tibiæ with feeble transverse carinæ. First joint of middle and hind tarsi longer than the three following. No special sexual characters have been observed. Length .22—.24 inch; 5.5—6 mm.

Not common. Occurs in the Middle Staets and Canada (Pettit).

D. striatulus, Say, Journ. Acad. V, p. 192. *cribrosus*, Lec. (Rhyssemus), Agass. Lake Super. p. 225. Harold, loc. cit.—Oblong, robust, piceous black, opaque. Head coarsely punctured; front hemihexagonal, clypeus feebly emarginate at middle and subangulate on each side. Thorax strongly convex, densely cribrate and with a distinct, broad longitudinal impression; sides nearly straight in front, deeply sinuate at base; distinctly margined at the sides. Elytra oval, strongly convex, slightly broader behind the middle, surface strongly, acutely carinate, intervals with a single row of coarse punctures. Body beneath opaque, coarsely punctured. Legs brownish, coarsely punctured. First joint of middle and hind tarsi long. Length .16—.20 inch; 4—5 mm.

Occurs from the Middle States northward to Canada, but not common.

—————o—————

Descriptions of new species of HISTERIDÆ of the United States.

BY GEO. H. HORN, M. D.

HISTER, Linn.

H. Ulkei, n. sp.—Oblong oval, sides feebly rounded, black, moderately shining. Front with distinct semicircular line. Thorax convex, sides feebly rounded, slightly broader behind, margin fimbriate with short hairs; exterior stria close to margin, entire, inner stria distant, slightly sinuous and more distant in front. Elytra with three entire dorsal striæ, a fourth and fifth apical, the former being one-half and the latter one-third the length of third; sutural stria abbreviated in front; subhumeral stria extending one-half from apex to base and close to the first dorsal, gradually diverging and with a short slightly arcuate extra-humeral stria; oblique humeral stria distinctly impressed. Pygidium and propygidium coarsely punctured, the latter rather more sparsely. Body beneath black, shining, abdomen fuscous and coarsely strigosely punctured toward the sides; side pieces of meso- and metasterna with few coarse punctures. Anterior tibiæ bidentate, hind femora and tibiæ stout, the latter irregularly biserially spinulose. Length (tip of suture to anterior margin of thorax) .20 inch; 5 mm.

This species differs from all our others of group 3, Lec., by its more elongate form, very obtuse in front, and by the well defined internal subhumeral stria with extra-humeral appendage and also by the presence of the fourth and fifth dorsal striæ. The legs are entirely black, the hind tibiæ robust as in *arcuatus* and irregularly biserially spinulose. This species should be referred to the fourth group of Marseul.

I have named this species in honor of Mr. H. Ulke, of Washington, by whom it was sent me under the name *instratus*, which species has no subhumeral stria. The elytra are colored as in *instratus*.

Occurs in Nebraska.

H. Arizonae, n. sp.—Oval, moderately convex, black, shining. Antennæ piceo-rufous. Front with distinct semi-circular stria. Thoracic margin sparsely pilose, and with two entire nearly parallel striæ. Elytra rufous and with

roughly sculptured resembling rather an *Egialia*, but not verrucose, the punctures being very coarse and deep and somewhat confluent. The thorax is totally black, the elytra brownish-piceous with pale patches as follows; sutural interval, apical margin extending by a narrow band half way to humerus, a very small patch on each side of scutellum, a small humeral spot at base of fifth and sixth intervals, a small linear spot on the fourth interval behind the preceding and a small V-like spot on the third and fourth intervals at about one-fourth from the apex. The markings resemble those of *congregatus* but each portion smaller. The hind tibiæ are moderately stout. Hind tarsi with first joint shorter than longer spur and not equal to the two following joints together.

In general aspect the species resembles a small dark colored variety of *pardalis* in which I had placed it previous to the present review and having been recognised as distinct was so carefully placed away as to have been practically lost at the time the *Aphodius* portion was written.

One specimen in my cabinet from California.

In the preceding portion of this paper numerous errors have been allowed to pass unnoticed some of them of trifling moment others serious. All are the result of not revising the proof after the first correction by the printer. Trans. Ent. Soc. 1870.

ERRATA.

Page 110 line before last, for speics, read species.

" 111 " 6 for Teuchestus read Teuchestes.

" 112 " 10 for insterpaces read interspaces.

" 112 " 18 after occidentalis add n. sp.

" 112 " 33 for unconspecious read inconspicuous.

" 112 " 42 after longer and add than broad.

" 114 " 23 for uniformily read uniformly.

" 114 " 6 from bottom for rather read rarely.

" 118 " 14 for fonnd read found.

" 119 " 19 for trituuberculate read trituberculate.

" 119 " 20 for prosteriorly read posteriorly.

" 119 " 25 for testaceus read testaceous.

" 121 " 20 for intinctly read distinctly.

" 124 " 3 after *inquinatus* read but larger and.

" 124 " 13 for foward read forward.

" 124 " 24 for thier read their.

" 125 " in the description of *stupidus* read, Elytra moderately convex, sides subparallel, surface moderately striate with scarcely any traces at apex, striæ punctured; intervals flat, rugose and muricate becoming smoother toward this apices of the elytra.

In the proof sheet one entire line of MSS., was omitted and also all the interlined emendations.

Page 126 lines 7 and 8, omit striæ and all the words after it. A longer series shows this character to be fallacious.

Page 126 line 9 from bottom for testaceous read testaceous.

" 127 " 14 omit distinctly,

" 128 " 17 after ferruginous add, Head smooth, clypeus feebly emarginate at middle.

Page 130 last line, omit at base.

" 131 next to last line omit by and add a comma.

" 131 last line read comparatively and omit comma.

" 132 line 10 for within read within.

" 133 " 15 for margined read marginal.

Remarks on the Species of the Genus *ISOMALUS* Er. of the United States.

BY GEO. H. HORN, M. D.

In a pamphlet entitled "Notices Entomologiques." Mr. Albert Fauvel in an article entitled "Etudes sur les staphylinides de l'Amerique Centrale, principalement de Mexique," publishes an account of the species of *Isomalus*, of that region. As our own species are rather rare and it being impossible for me to furnish him with the necessary material for his systematic catalogue of the Staphylinidæ in general, I have thought it proper to review our four species and point out some variations exhibited by them from the present descriptions of the genus.

In the work above cited Fauvel makes the following remarks: "The species of *Isomalus* are remarkable for their extremely flattened form, indicating a priori their habit of living under bark and in the trunks of decayed trees. They are distinguished from the other Piestini by the following characters; body glabrous, smooth; head with lateral longitudinal groove; front mutic; mandibles prominent mutic; maxillary palpi with last joint somewhat shorter than the preceding; thorax not grooved, broadly sinuate behind; elytra without sutural striæ; legs mutic; abdomen strongly margined."

Our species all agree in being very much depressed, smooth and shining; thorax strongly narrowed at base and not longer than the head.

Two have a distinct sutural stria.....*nigrellus*, Lec. and *canadensis*, n. sp.

Two have no sutural stria.*pallidus*, Lec. and *fasciatus*, Lec.

By means of the groove at the side of the head they may be tabulated in the following manner;

Lateral groove above the eyes and extending slightly behind